

Biological Resources

AFFECTED ENVIRONMENT

Consequences of the alternatives could potentially affect plant and animal species habitat, resulting in changes in their populations or overall well-being. Several rare, threatened, and endangered species are among those species possibly affected. Various features of the alternatives could also affect specific plant communities that are of rare and limited size and distribution.

A listing and description of species and rare habitat is provided in the Resource Description in Part 1 of the study.

Trends

Threatened and Endangered Species. Of the 1,400 species that are estimated to exist in the study area, there are 24 federally- or state-listed threatened or endangered plant and animal species and another 60 species considered rare or of special concern. The listed species are described in Part 1, Resource Description and listed in Tables A1 and A2 in the “Tables” section. Table 15 includes a summary of threats to federally- or state-listed species within the study area. The most common threats for these species include: invasion by non-native species (for plant communities); and loss or degradation of habitat.

Rare and Sensitive Habitat. Of the fourteen main habitat types within the study area, most are endangered or severely reduced from their former range. This includes kelp beds, wetlands, riparian areas, native grasslands, coastal dune and strand, coastal sage scrub, central maritime chaparral, and valley oak woodlands. Bishop pine and tanbark forests are rare because they are relic forests of limited extent. Many of the rare, threatened, and endangered species within the study area depend on these habitats for their survival.

Wetlands and Floodplains. The conversion of habitat to cropland has led to the drainage and

alteration of almost 54% of wetlands in the nation.⁵⁴ California has lost 91% of its historical wetlands over the past century. Coastal wetlands, such as those found in the study area, are among the most endangered habitat types in the world. Wetlands have been filled, dammed, diverted, channelized, and polluted. Threats to wetland health include degradation from development and agricultural activities, siltation, and invasion of non-native species.

Flooding has been known to occur in areas along the study area coast. The Santa Barbara County Public Works Department reviews proposed subdivisions and single building permit applications for elevation above the 100-year flood level. Proposed development is checked for conformance with the flood plain management ordinances, setbacks from major watercourses, adequacy of drainage plans, regional drainage planning, and protection of existing development.



Haskell's Beach, NPS photo

Table 15: Threats to Threatened and Endangered Species

Species	Status	Threats
Gaviota tarplant <i>Deinandra increscens</i> ssp. <i>villosa</i>	FE, SE	destruction of individual plants, habitat loss and degradation from petroleum production
Lompoc yerba santa <i>Eriodictyon capitatum</i>	FE	invasive plant species, low seed productivity and naturally occurring, catastrophic events
beach layia <i>Layia carnosa</i>	FE, SE	trampling, residential development, off-road vehicles, and invasion by exotic plants
Gambel's water cress <i>Rorippa gambelii</i>	FE, ST	degradation and hybridization with similar species
soft-leaved indian paintbrush <i>Castilleja mollis</i>	FE	trampling, soil loss, herbivory by deer and invasive species
Surf thistle <i>Cirsium rhotophillum</i>	ST	vehicles, foot traffic, and non-native plants
Seaside bird's beak <i>Cordylanthus rigid</i> ssp. <i>littoralis</i> (no known occurrences, suitable habitat)	SE	development, energy projects, vehicles, and military operations
Beach spectacle pod <i>Dithyrea maritima</i>	ST	trampling, vehicles, and non-native plants
Tidewater goby <i>Eucyclogobius newberryi</i>	FE	loss or degradation of habitat due to water diversions, exotic species invasion, construction, pollution and siltation are the largest threats to recovery
Unarmored threespine stickleback <i>Gasterosteus aculeatus williamson</i>	FE, SE	habitat loss through aquifer drawdowns and beaver activity
Southern Steelhead <i>Oncorhynchus mykiss irideus</i>		threats to this species include habitat loss from activities such as degradation of estuaries, and land development, as well as in-stream barriers, and reduced water flow
California red-legged frog <i>Rana aurora draytonii</i>	FT	habitat degradation from urbanization, mining, improper management of grazing, recreation, invasion of non-native plants, off-road vehicles, reservoir construction, grazing, and water quality
Western snowy plover <i>Charadrius alexandrinus nivosus</i>	FT	human disturbance to nests and breeding sites, predation, and habitat loss due to invasion of exotic species
Southwestern willow flycatcher <i>Empidonax traillii extimus</i>	FE, SE	cowbird parasitism and habitat destruction
California condor <i>Gymnogyps californianus</i>	FE, SE	predation, collisions with wires.
Bald eagle <i>Haliaeetus leucocephalus</i>	FT, SE	intentional shooting, poisoning and smuggling, chemicals, and powerlines
Brown pelican <i>Pelecanus occidentalis californicus</i>	FE, SE	disease outbreaks, low productivity and colony failure, the dependence for food primarily on the northern anchovy, oil and other spills from ships, the presence of relatively high levels of pesticides, injury from fish hooks and fish line entanglement, El Nino events.
California clapper rail <i>Rallus longirostris obsoletus</i>	FE, SE	predation, loss of habitat, water quality, and non-native species invasion, habitat fragmentation from surrounding residential, recreational, and commercial areas as well as highways
California least tern <i>Sterna antillarum browni</i>	FE, SE	habitat disturbance and predation
Least bell's vireo <i>Vireo bellii pusillus</i>	FE, SE	habitat loss, military disturbance, non-native species invasion, and long-term camping
Peregrine falcon <i>Falco peregrinus</i>	SE	loss of wetland habitat of primary prey, poachers robbing nests, shooting by hunters, and food chain contamination from use of persistent pesticides
Willow flycatcher <i>Empidonax traillii</i>	SE	degradation and loss of riparian habitat, livestock grazing, parasitism by the brown-headed cow bird
Belding's savannah sparrow <i>Passerculus sandwichensis beldingi</i>	SE	filling, dredging, and development of wetlands, loss of tidal connection to the ocean, and inconsistent tidal influence on upper marsh habitat
Southern sea otter <i>Enhydra lutris nereis</i>	FT	cruise ship wastes, oil and fuel pollution, increased development such as boat harbors, log transfer facilities, floating lodges, mariculture, and human population growth
FE = Federally-listed Endangered FT = Federally-listed Threatened SE = State-listed Endangered ST = State-listed Threatened		

ENVIRONMENTAL CONSEQUENCES

The following section assesses potential impacts to threatened and endangered species, rare and sensitive habitat, wetlands, and floodplains, and the effectiveness of current and proposed programs and policies in protecting these resources.

Alternative 1

Private Land Stewardship. Private lands play a crucial role in linking or providing important habitats for fish, wildlife, and plant species. Approximately 40% of the study area is privately-owned. Because there has been relatively little development within the study area, many of the privately-owned lands contain suitable habitat for listed species as well as other sensitive or rare species. Agricultural use of the land has preserved important habitat. However, many agricultural activities can have a direct, adverse impact on listed species. Agricultural practices can degrade habitat through trampling by livestock, and degrading watersheds through damming, erosion, and runoff. While some landowners implement restoration and habitat enhancement activities, this is a voluntary action that is limited by financial constraints. Agricultural activities would continue to have some adverse impacts on habitat, including wetlands. This impact could be mitigated by restoration and habitat enhancement activities on private land.

Educational and Incentive Programs.

Educational and technical assistance programs such as those offered by the Cachuma Resources Conservation District offer the potential for coordinated efforts to protect resources and could have a long-term beneficial impact.⁵⁵ However, since both technical and financial assistance is currently solicited by individual landowners on an as-needed basis, it is not coordinated to address critical needs for protection of specific biological resources. In addition, much of the funding available for habitat and species conservation is available on a national or statewide basis creating high competition for limited funding (see Table 16: Summary of State and National Grant Programs for

Conservation). If current levels of funding and participation within the study area continue, these programs could result in minor, long-term beneficial impacts on threatened and endangered species and their habitats.

Acquisition and Easements. Private preserves such as Arroyo Hondo provide additional protection and management of biological resources. The Arroyo Hondo Preserve, recently acquired by the Land Trust for Santa Barbara County, contains essential habitat for several federally-listed endangered species. Habitat restoration and enhancement are among the Preserve's management goals. Arroyo Hondo will continue to provide long-term benefits to biological resources. Private preserves can also take advantage of financial incentive programs that are not available to federal agencies.

Conservation and agricultural easements also provide additional opportunities to protect biological resources. The Freeman Ranch Easement, for example, requires conservation of natural and agricultural resources. Purchase of easements and land acquisition as described in the section on land use may be limited in the future as land values in the eastern portion of the study area continue to rise, and funding sources remain limited. Habitat enhancement and restoration associated with conservation easements and private preserves would continue to have a positive beneficial impact on biological resources.

Watershed Planning and Wetland Restoration.

Voluntary watershed planning efforts allow partnerships to form that can determine watershed solutions that are economically viable which, in turn, creates a higher guarantee of implementation. However, these initiatives can tend to address short-term versus long-term management issues and avoid more controversial issues necessary to improve watershed health.⁵⁶ While there is no comprehensive watershed planning program for the south coast watersheds of the study area, the Cachuma Resource Conservation District has proposed a coordinated resource management plan for the Gaviota Creek

Table 16: Summary of State and National Grant Programs for Conservation

Grant	Agency	Current Funding Levels
California Natural Heritage Preservation Tax Credit*	California Wildlife Conservation Board	Funding is currently suspended. \$33,635,827 in tax credits were awarded in FY 2001 (statewide).
Wetlands Recovery Project Small Grants Program*	California Coastal Conservancy	2001-2001: \$20M (statewide)
Conservation Reserve Program	Farm Services Agency	FY 2002: \$1.8 B (nationally)
Environmental Quality Incentives Program	NRCS	FY 2001: \$187 M (nationally)
Wildlife Habitat Incentives Program	NRCS	FY 2002: No new available funding. (nationally)
Wetlands Reserve Program	NRCS	FY 2002: No new available funding. (nationally)
Grassland Reserve Program	NRCS	FY 2003: \$48 (nationally)
Stewardship Incentive Program	USDA	FY 2002: \$0 (nationally)
Private Stewardship Grants	USFWS	FY2002: \$10 M (nationally)
North American Wetlands Conservation Act Program	USFWS	FY2002: \$ 77 M (nationally)
National Coastal Wetlands Conservation Grant Program	USFWS	FY 2002: \$15 M (nationally)
Recovery Land Acquisition	USFWS	FY 2002: \$17.8 M (nationally)
Habitat Conservation Planning Assistance	USFWS	FY 2002: \$6.6 M (nationally)
Habitat Conservation Plan Land Acquisition	USFWS	FY 2002: \$61.3 M (nationally)
Partners for Fish and Wildlife Program*	USFWS	FY: \$35.6 M (nationally)
Landowner Incentive program	USFWS	FY 2002: \$40 M (nationally)
Coastal Program	USFWS	FY 2002: \$11.3 M (nationally)
Sources: Restore America's Estuaries, 2002, California Coastal Conservancy, 2002.		
*Funding has been applied to landowners or groups in the study area.		

watershed. This could have long-term beneficial impacts on listed and rare species in this watershed. Existing wetland restoration activities described under Alternative 1 should have a long-term, positive impact on wetlands within the study area.

Coastal Plan. Local coastal plan policies will continue to protect environmentally sensitive habitat for the areas within the coastal zone by preventing most development projects that would have adverse impacts. While development projects that show a clear, significant impact on environmentally sensitive habitat are not allowed

under the Coastal Plan, some amount of cumulative impacts to biological resources may result from the approval of development projects that have minor adverse impacts to environmentally sensitive habitat. For example, several development projects near Goleta have recently been approved or built. These include the Bacara Resort and an approved development plan for 162 residential units at Ellwood Mesa.

Public Land Management. Federal land managing agencies in the study area such as the Bureau of Land Management, the U.S. Air Force,

and the Forest Service are required under the Endangered Species Act (ESA) to conserve threatened and endangered species and, in consultation with the Fish and Wildlife Service, to ensure that their actions do not jeopardize listed species or destroy or adversely modify critical habitat.

Federal land managers within the study area also work toward the restoration and enhancement of critical habitats, native, and rare species. While funding can be a constraint to federal land managers in protecting and restoring habitat, these agencies do provide a long-term positive benefit in that they have established goals and management programs to protect resources across the landform in an ecosystem approach.

Los Padres NF activities that affect habitat include prescribed burning, timber stand improvement and reforestation, pest management, site specific activities such as recreational facilities and roads, and silviculture treatments. Generally, these activities have a positive long-term impact on resources by improving the health and vigor of the forest vegetation as well as fish and wildlife.

The Point Sal land managed by the Bureau of Land Management currently has no public access and is managed as an Area of Critical Environmental Concern (ACEC). The area is managed to protect unique cultural, visual, geologic, and biological resources including rare, threatened, and endangered plant and animal species, and to maintain opportunities for compatible scientific and primitive recreation activities.⁵⁷ Because of existing resource management priorities, no adverse impacts to resources at Point Sal are expected.

The State of California has established a Marine Life Protection Area, the Vandenberg Marine Resources Protection Act Ecological Reserve, on two square nautical miles adjacent to Point Arguello. The reserve protects the sensitive soft and hard bottom habitats in the near shore intertidal zone from recreational and commercial fishing.⁵⁸ Regulations on fishing and recreational

boating in this area will continue to prevent direct adverse impacts to these resources.

On Vandenberg AFB, long-term adverse impacts arise during construction of new facilities and usually involve habitat loss and degradation. Short-term adverse impacts to natural resources are typically related to temporary mission activities, which do not permanently alter the natural environment. These short-term impacts include noise, fallout, and vapor clouds occurring during and immediately after launch activities. Vandenberg AFB will continue restoration activities and resource management on base which will have a long-term positive benefit to biological resources.

Impacts from the California Coastal National Monument establishment are unknown at this time. Increased recreational use associated with the new designation could adversely impact some resources. However, wildlife management objectives could have a long-term beneficial impact.

Recreational Areas. California State Parks and Beaches, Los Padres National Forest, County Parks, Arroyo Hondo Preserve, and the Coastal Trail provide recreational access in the study area. According to the Forest Service Resource Plan, the adverse impacts of recreational activities in the forest on fish and wildlife are negligible since 64% of forest recreation is highly managed.⁵⁹ For state and county parks, it is assumed that some direct adverse impacts will result from the construction of new facilities associated with park maintenance and visitor services.

Visitor impacts from hiking, horseback riding, and biking could have direct and indirect impacts on vegetation. Direct adverse impacts could result from soil disturbance, trampling, or removal of vegetation, and disturbance of wildlife activities or habitat. Indirect adverse impacts would include disruption of wildlife activities for species sensitive to human disturbance. These impacts would vary from negligible to minor depending on the location of recreational activities and their proximity to sensitive species and habitat. For example, pristine rocky intertidal zones found along the study area coast are more sensitive to recreational impacts

than sandy beaches. Rocky intertidal areas near shore would continue to experience direct impacts from recreational activities.

Recreational land managers often provide mitigation measures to minimize the impacts of recreational activities on biological resources. Monitoring programs are established so that activities can be ceased or redirected if it is found that they are having a negative impact on biological resources. In addition, educational programs for biological resources in recreation areas can have a long-term beneficial impact as recreational users learn to avoid sensitive areas and species.

Conclusion

Threatened and endangered species will continue to be protected by local, state, and federal laws. Indirect adverse impacts to threatened and endangered species and their habitat on public and private lands may occur as a result of recreation, agricultural activities or residential and commercial development and their associated infrastructure such as roads, landscaping, etc. Such development could result in fragmentation of habitat and introduction of invasive species if non-native plants are introduced to developed areas. Activities associated with agency missions such as recreation, silviculture, or military activities can have a negligible to major adverse impact depending on the activity and its relationship to sensitive species. Restoration and habitat management activities on public lands and landowner stewardship activities will continue to have long-term positive benefits.

Alternative 2

Land Acquisition and Easements. As described in the previous section on land use, establishment of new mechanisms for the purchase of open space could result in additional land conservation within the study area. Emphasis is different for each management entity in terms of the amount of protection focused on agricultural preservation, ecological protection, and enhancement, or recreation.

Open space districts (OSD) and State Land Conservancies can serve as managing entities for purchased land with important biological resources. Some of these entities have as their primary goals, the restoration and enhancement of biological resources such as wetlands and habitat for threatened or endangered species. Establishment of an OSD or conservancy could provide long-term beneficial impacts to biological resources by emphasizing an ecosystem approach to land acquisition and restoration activities.

Recreational access is also a goal of many land conservancies and open space districts. The amount of protected land varies among land conservancies and open space districts depending on goals established during inception. Adverse impacts from recreational use would be the same as those described under Alternative 1. Visitor impacts from hiking, horseback riding, and biking could have direct and indirect impacts on vegetation. Direct adverse impacts could result from soil disturbance, trampling, or removal of vegetation, and disturbance of wildlife activities or habitat. Indirect adverse impacts would include disruption of wildlife activities for species sensitive to human disturbance. These impacts would vary from negligible to major depending on the location of recreational activities and their proximity to sensitive species and habitat. Use of siting, design, monitoring, and educational programs as well as adaptive management strategies could mitigate impacts from recreational activities.

Additional funding sources would also create the potential for more land to be protected under conservation easements. Easement agreements often include goals for protecting biological resources resulting in beneficial impacts.

A comprehensive update of the local coastal plan could provide additional protection of biological resources identified by more current scientific resources. This action could result in a positive benefit to biological resources.

Watershed Planning. Watershed conservation efforts by public agencies and landowners in the

areas from Point Conception to Coal Oil Point have been on a site specific basis. A coordinated watershed planning effort on the Gaviota Coast organized through the Cachuma Resource Conservation District would have positive impact on many of the area's threatened and endangered species by improving wetland health, riparian habitat, and water quality.

Conservation Grants and Programs

Participation. Under Alternative 2, landowners could take greater advantage of existing federal and state assistance programs listed in Table 16 for the protection of biological resources. This would have a moderate beneficial impact on biological resources in the study area.

Marine Life Protection Areas. The concepts for State Marine Protection Areas proposed by the California Department of Fish and Game at Conception/Vandenberg coast, Refugio State Beach and Naples would have a beneficial impact on rocky intertidal habitat, sandy bottoms, kelp beds,

and reefs along the study area coast which support high levels of marine invertebrates and fish.

Conclusion

Additional land conservation programs and restoration activities with an emphasis on ecosystem management and habitat restoration would have a long-term, direct beneficial impact on biological resources as compared to Alternative 1 where such efforts are not coordinated.

Direct adverse impacts on biological resources from low-intensity, limited recreation and access, would be negligible. If high intensity recreation was the main focus of additional open space protection, then direct adverse impacts would range from negligible to major depending on location of facilities and trails in proximity to wetlands, threatened and endangered species and other sensitive habitats. Use of siting, design, monitoring, and educational programs as well as adaptive management strategies could mitigate impacts from recreational activities.



elephant seals, Rick Skillin

Cultural Resources

AFFECTED ENVIRONMENT

Features of the alternatives have the potential to affect prehistoric and historic sites, structures, and artifacts found at numerous locations in the study area. The historical background of the study area and the physical prehistoric and historic resources are discussed in the "Resource Description" section. A preliminary inventory of sites and structures is listed in Table A3 in the "Tables" section.

Prehistoric archeological sites and related artifacts consist of various forms of evidence of human activities that spanned time from approximately 10,000 years ago until the time of European contact in 1542. Prehistoric artifacts include items such as flaked and ground stone tools as well as bone and shellfish objects. Remnants of basketry or cordage, remains of living spaces, fire hearth, bedrock milling stations, mortuary remains, or rock art may exist as parts of prehistoric sites. These sites may manifest themselves as a scatter of surface material or as subsurface or midden deposits. Sites often include surface and subsurface components. In addition, sites may be submerged and include isolated artifacts deposited on the seafloor from erosion of upland sites, or remnants of aboriginal watercraft.

Historic archeological sites can be subsurface remains that contain buried foundations or other structures such as pier footings, depositional sites such as refuse dumps, and other locations. The sites may include surface remains of walkways, roads, or structures. Submerged historic sites include shipwrecks, cargo spills, historic anchorages and wharves, and aircraft.

Historic buildings and structures within the study area include lighthouses, ranch and farming structures, school buildings, bridges, railroad structures, cold war buildings and installations, and wharves.

While cultural landscape studies have not been conducted for most of the study area, the ranching landscape may be a significant cultural resource. The alternatives have the potential to affect the historic settings of sites and the character of cultural landscapes.

Trends

Because development has been limited along the study area coast, the region has many sites that have retained a high degree of integrity.⁶⁰ Currently, archeological and historical resources are threatened by agricultural activities such as plowing, cattle grazing, bulldozing, as well as grading for roads and highways, construction of buildings, parking lots, airstrips, and railways. Other threats include water erosion, fire, off-road vehicle use, development, and unauthorized collecting of artifacts.⁶¹

Many cultural sites that are eligible for listing on the National Register of Historic Places have not yet been listed. Vandenberg AFB has hundreds of eligible historic and archeological sites that could be listed.⁶² The Bureau of Land Management is also working to have an area of Point Sal listed as a National Register Archeological District.⁶³

Chumash organizations such as the Coastal Band of the Chumash Nation, Barbareño Chumash Council, and the federally-recognized Santa Ynez Band of Chumash, continue to use ceremonial sites within the study area that are accessible. These organizations have also been protecting cultural and sacred sites and archeological resources.⁶⁴ The only land set aside for use by Chumash is the 77-acre parcel of land donated by Chevron Oil, east of Gaviota State Park. The tribe uses this land for cultural, social, and ceremonial purposes.

Chumash organizations, including the federally recognized Santa Ynez Band, continue to lack access to many cultural and sacred sites. For example, access to Point Conception (Humqag) is limited by the surrounding private property. Other sites such as the former village site at Haskell's

Beach have been displaced by development. Haskell's Beach was for many centuries the site of a major Chumash settlement. The Bacara Resort at Haskell's Beach's environmental impact report identified significant environmental effects which could possibly result from the project, including adverse impacts on archeology and ethnic concerns regarding a paved parking lot was constructed over burial sites. Although mitigation was required to protect the sites from physical degradation, it did not address the religious and cultural concerns of the Chumash. At least five archeological sites were impacted, including three recorded Native American cemeteries, containing over two hundred known Chumash burials.⁶⁵

Vandenberg AFB has granted the Santa Ynez Band of Chumash and other Chumash groups access to sacred sites since 1974. In August of 1998 access was expanded to allow members of the Santa Ynez Band of Chumash to hunt and fish and collect plants for rituals and basketry on base land. They can also send observers whenever construction activity approaches ancestral graves, village sites, and shrines.⁶⁶



Bacara Resort, NPS photo

ENVIRONMENTAL CONSEQUENCES

Alternative 1

Protection of Cultural Resources Under Current Programs and Policies

Private Land. Under Alternative 1, historical and archeological resources located on private land within the study area would continue to receive some protection from landowner stewardship. Many landowners protect historic resources including ranch buildings. Enrollment of land in 10-year Williamson Act contracts and purchase of easements result in indirect beneficial protection of cultural resources by maintaining undeveloped land. Historic structures and archeological sites on private lands receive moderate beneficial impacts by limiting public access thereby preventing inadvertent damage by human trespassing and vandalism. In addition historic structures and archeological sites receive direct beneficial impacts from landowners that fence sensitive cultural areas. This is done at the landowner's discretion and with private funding. The cultural ranching landscape receives direct beneficial impacts from agricultural land preservation.

Some cultural resources on private property, including historic adobe buildings and ranch structures, could be adversely impacted from natural deterioration from lack of maintenance and some sites could eventually be lost. There could also be moderate adverse impacts from cattle grazing through trampling of sites and artifacts located in previously ungrazed areas. This could be mitigated by fencing of sites to keep cattle out, which some landowners have done. Development of land could cause direct adverse impacts on cultural and archeological resources where proposed large projects are inappropriately sited. For example, the proposed Naples development would be located in the vicinity of prehistoric Chumash village, *Mikiw*, an area rich in archeological sites.

California State policies and programs provide some protection of historical and archeological resources within the study area through the

California Environmental Quality Act, which requires the identification of both cultural resources and potential impacts during project planning. Impacts on cultural resources would require appropriate mitigation measures.

Development associated with agricultural production and recreation or allowed through conditional use permits, such as golf courses, could cause moderate and direct adverse impacts on cultural sites. Indirect adverse impacts could occur as a result of drainage changes, the presence of grazing animals, and increased opportunities for vandalism and pot-hunting by residents and visitors. Cultural landscapes would be adversely impacted by large and/or poorly located developments. However, visual quality protection goals for the coastal zone, developed by the county, are such that cultural landscape values would be taken into consideration in planning and design.

Public Land. Most public land management agencies are mandated to protect cultural resources to the extent possible consistent with their mission. Many of the historic structures and archeological sites on public land remain, some of which have retained their physical integrity. The ability of land management agencies to maintain and protect cultural resources would continue to be limited by funding and staffing levels.

Vandenberg AFB has an integrated cultural resources management plan that includes curation, a GIS cultural resource database, a public awareness program, and scientific contributions. The base maintains the Space Launch Complex 10 National Historic Landmark and has been undergoing refurbishment work on the complex. Limited public access to the base has helped to protect and to maintain the integrity of cultural resources. Impacts are directly reduced by cultural resource staff responding to emergencies including wildland fires, toxic spills, and floods. Resources are indirectly protected by cultural resource staff review of proposed projects and actions on the base. Natural threats to cultural resources include wildfire during the dry season and flooding. For example, heavy flooding during the El Nino storms

in 1998 damaged the stream crossings and bridges and the roofs of two historic houses in the Sudden Ranch area, a proposed historic district. In 2002, a wildfire burned through the same area destroying some of the historic structures.⁶⁷ Some sites eligible for listing on the National Register of Historic Places located on public land have not been listed because of limited capacity to process nominations at the California State Office of Historic Preservation.

Despite public access restrictions, some cultural resources on the base are directly and adversely impacted by vandalism and poaching of artifacts. Under Alternative 1, the base would continue to make efforts to reduce these impacts. For example, the base has refurbished two ranch houses in the Sudden Ranch area for security forces and base game wardens to protect the houses from vandalism by transients and to assist in controlling poaching, smuggling, and illegal artifact collection.⁶⁸

Los Padres NF protects cultural sites in the Santa Ynez Mountains according to provisions of its Resource Management Plan. Activities with major adverse impacts on cultural resources are poaching and vandalism, wildfire, prescribed burning, general forest recreation, grazing, and program management.⁶⁹

Additional adverse impacts on cultural resources could result from additional recreational activity on public lands demanded by a growing population. The extent of such impacts is dependent on the type and intensity of the recreational activities, the proximity of their location to sensitive archeological and historical resources and the management level capability of public land managers.

Current Protection of Chumash Sacred Sites and Artifacts

With future population growth, and increased recreation use, the study area's Chumash sites could become further degraded by future development. Development and construction of roads and the railroad have had direct negative impacts on Chumash sites.

Under Alternative 1, Chumash organizations would continue to help protect archeological resources. Through a memorandum of understanding between the Santa Ynez Band of Chumash and Vandenberg AFB, the Chumash may rebury any Native American human remains in designated areas. Their efforts would continue to result in direct beneficial impacts on Chumash sites and artifacts on Vandenberg AFB. Additional access is not anticipated under current programs and policies.

Research and Interpretation

The ability of researchers to study the cultural resources in the study area is limited by access as well as funding. Many historic structures and archeological sites are located on private land, making it difficult to study and inventory these sites. There is also a need for a cultural landscape study of the coastal ranching landscape to determine its level of significance. Lack of documentation of these cultural resources could result in indirect adverse impacts.

Vandenberg AFB has studied and inventoried cultural resources on the base. Documentation of these cultural resources has resulted in direct beneficial impacts including protection of Chumash sites and artifacts, historic buildings associated with ranching and agriculture, and Cold War structures. Public education and interpretation of cultural resources would continue to be limited by security constraints and staffing and funding levels.

Conclusion

Under Alternative 1, historic structures, archeological sites and the historic ranching landscape located on private land would continue to receive some positive benefit from agricultural preservation through zoning, easements, Williamson Act contracts, and landowner stewardship. Protection of resources would be limited by private landowner willingness and ability to expend funds on protection. However, development of land could cause direct adverse impacts on cultural and archeological resources through degradation or total loss of resources in the long-term. Some cultural resources on private

property, including historic adobe buildings and ranch structures, could receive moderate negative impacts from trampling and natural deterioration. Destruction from future development would cause some irreversible impacts.

Public land management would continue to have a long-term beneficial impact on the protection of cultural resources. However, some cultural resources on public lands may be directly and adversely impacted by vandalism and poaching of artifacts. Federal agencies would continue to make efforts to reduce these impacts, limited by funding and staffing. Some important archeological and cultural resources eligible for listing on the National Register of Historic Places would continue to lack documentation. Sites could experience negligible to minor adverse impacts from natural deterioration from lack of maintenance.

Chumash organizations would continue to protect cultural and sacred sites, resulting in direct beneficial impacts. Chumash organizations would continue to lack access to cultural and sacred sites on private land.

Alternative 2

Protection of Cultural Resources under the Proposed Programs and Policies

Under Alternative 2, additional tools and programs could be pursued to further protect cultural resources. This could include partnerships between public agencies, Chumash groups, and private landowners to inventory, protect, and access cultural resources. Listing of additional sites on the National Register of Historic Places may lead to increased funding from federal and state preservation programs. Programs include the Historic Preservation Fund (FY 2002: \$39 million), administered by the National Park Service, the Save America's Treasures grant program (FY 2002: \$30 million) administered by the National Trust for Historic Preservation, and the California Heritage Fund (\$8.5 million from a 2000 State Bond Act). Save America's Treasures grants are available for preservation and/or conservation work only on

nationally significant intellectual and cultural artifacts and nationally significant historic structures and sites. The California State Office of Historic Preservation states that there are more historic preservation projects than funding available. Use of these programs would therefore provide minor beneficial impacts in the long-term.

Additional land use conservation tools proposed in Alternative 2 could provide long-term, indirect beneficial impacts on cultural resources by controlling development and protecting open space.

Adverse impacts to cultural resources could result from additional recreational activity associated with open space areas. The extent of such impacts would be dependent on the intensity of the recreational activities and the proximity of their location to sensitive archeological and historical resources.

Establishment of the Conception State Marine Park and Refugio State Marine Park concepts would result in beneficial impacts on marine-related cultural artifacts such as shipwrecks by protecting archeological and geological resources.

Access to Chumash Sites

Chumash organizations could work with the US Coast Guard or subsequent owners to develop access and interpretive opportunities at Point Conception. Allowing the Chumash groups to access and protect sacred sites at Point Conception would result in beneficial impacts by helping to meet their cultural and religious needs.

Research and Interpretation

Additional public recreational opportunities through land acquisition, trail development, and other public access points may provide opportunities for public interpretation and education about cultural resources within the study area. This could result in increased public knowledge and change in behavior to encourage protection of resources, resulting in beneficial impacts in the long-term. However, access could increase vandalism, illegal artifact collection, and other actions that could have adverse impacts on cultural resources.

Conclusion

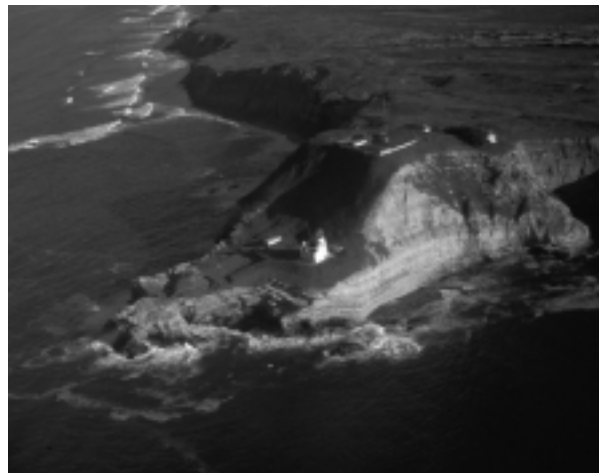
Alternative 2 includes actions that could result in long-term beneficial impacts on cultural resources, including sites that may be eligible for listing on the National Register of Historic Places.

Establishment of the Conception State Marine Park and Refugio State Marine Park concepts would result in beneficial impacts on marine-related cultural artifacts such as shipwrecks.

Additional land use tools such as transfer of development rights and the creation of an open space district within the study area could provide additional long-term indirect beneficial impacts on cultural resources by controlling development that could occur under Alternative 1.

Cultural resources would receive minor beneficial impacts from interpretive sites in recreational areas. This could result in increased public knowledge and change in behavior to encourage protection of resources. Depending on the intensity and location, increased recreational use may cause adverse impacts on cultural resources.

Allowing Chumash groups to access and protect cultural and sacred sites at Point Conception would result in beneficial impacts by helping to meet their cultural and religious needs.



Point Conception, NPS photo

Recreational Use and Experience

AFFECTED ENVIRONMENT

The existing status of recreational resources is discussed in Part 1, Resource Description. Table 17 provides a summary of existing and proposed recreation areas. Various features of the alternatives, depending on the degree to which they encourage expansion of access and development of recreational facilities, could affect the scale and range of outdoor recreational opportunities offered to the public in the study area.

Future growth and development may affect the quality of the recreational experience. Changes may occur in environmental amenities such as scenic quality and natural quiet which contribute to the enjoyment of recreational experiences. Recreational experience may also be affected by the extent to which opportunities are provided for enrichment through educational or interpretive activities.

Trends

The population of California is expected to grow from 30 million to 50 million people by 2020. Approximately 85% of the additional 20 million people are expected to live within two hours of the coast. Insufficient funding has led to difficulties in meeting new public access demands from growth pressures.⁷⁰

Total visitation to both state and county parks within the study area exceeded 1.1 million in

1999. This figure does not include visitation to the Los Padres National Forest. Current visitation to both state and county parks is 641,620.

Annual state park attendance within the study area averaged approximately 578,860 during the last six years.⁷¹ However, user surveys and population projections for the state indicate a need for park expansion in coming years. Visitor use at Gaviota State Park is currently at capacity.⁷² The primary current needs are maintaining and improving existing facilities. Future expansion plans in the study area include a 2,500-acre portion of the El Capitan Ranch recently acquired by the Trust for Public Land and transferred to the California Department of Parks and Recreation (CDPR) for the development of a new park. Budget constraints have prevented CDPR from providing public access to the Point Sal State Beach.

Historical attendance figures for Santa Barbara County parks within in the study area were not available, other than for fiscal years 1999 through 2002. Attendance for County parks was 111,980 for July 2001 to June 2002. Due to the limited data, attendance projections were not feasible. Ocean Beach Park experienced a 22% drop in attendance in 2002 after the park began annual six-month closures to aid the survival of the snowy plover. Park attendance has averaged 80,596 visitors since fiscal year 2000.⁷³

According to Santa Barbara County Parks, Jalama Beach attendance has increased every year, and the park's size is unable to accommodate current demand. At its peak season, the park experiences demand of 30% over capacity each day. Visitation

Table 17: Summary of Existing and Proposed Recreational Areas

Existing Recreational Areas	Appx. Acreage	Future and Proposed Recreational Areas	Appx. Acreage
Santa Barbara Shores County Park	119	El Capitan State Park	2,500
Ocean Beach County Park	36	Jalama Beach County Park Expansion	70
Jalama Beach County Park	28	Ellwood Mesa	135
Gaviota State Park	2,600		
State Beaches	380		
Arroyo Hondo	780		
Coal Oil Point Reserve	117		
Los Padres National Forest	20,400		
Totals	24,460		2,735

figures are expected to increase for Jalama Beach. Discussions are currently underway to expand the existing 28-acre park east and south along the Pacific Ocean to approximately 100 acres.⁷⁴

Between 1996-1998, there were approximately 850 beach closures along the Santa Barbara County coast resulting in a 30% chance that a beach would be closed during this period.⁷⁵ The closings were commonly posted due to high bacteria counts (fecal coliform). The majority of these closings were attributed to pollutants brought to the coast by river runoff. (See Water Resources section for more detail on this issue.)



Jalama Beach, NPS photo



beach recreation, NPS photo

ENVIRONMENTAL CONSEQUENCES

Alternative 1

How will current programs and policies meet recreational demand?

Under Alternative 1, the recreational opportunities within the study area would continue to meet the needs of local residents and regional visitors in the short term. In the long-term, additional recreational opportunities would be needed for an increased population in Santa Barbara County and the larger region. In addition, beach closures due to poor water quality and for habitat protection of the snowy plover would continue to have an adverse impact on recreational opportunities.

Coastal trail. Completion of the coastal trail by Santa Barbara County has been challenged by landowner reluctance to grant access through their property because of privacy concerns and potential conflicts with agricultural operations. The constraints to completion of the coastal trail would continue to have adverse impacts on coastal access within the study area in the long-term.

Easements. Trail easements with willing landowners could be acquired for public access purposes. For example, 650 acres of private land on the El Capitan Ranch adjacent to the future state park will include a conservation easement with dedicated trail access. Owners of Dos Vistas Ranch have also indicated their intention to dedicate a trail easement through their property. In the near term, dedicating trail easements would have a minor beneficial impact on recreation. However, in the long-term, limited funding and rising land values could limit the ability of public agencies to purchase trail easements, resulting in adverse impacts on recreational opportunities.

Future Land Acquisition. Acquisition of land for recreational use depends on the availability of funds for acquisition, development, and management. Additional park lands that have been acquired such as the future El Capitan State Park and the Ellwood Mesa open space area would result in long-term beneficial impacts on

recreational opportunities through additional beach access and recreational facilities. Increasing land values, development, and funding constraints would continue to have significant adverse impacts on the ability to acquire land for recreational use.

Coastal Recreation and Access. Santa Barbara County's Local Coastal Program addresses public access and recreation at the shoreline. Coastal plan recommendations for additional coastal access have been difficult to meet because of development and private property concerns. For example, the Bacara Resort at Haskell's Beach was built in 2000 despite the Coastal Plan's proposal for a 23-acre coastal park. Instead of a shoreline park, ½ mile of beach access was provided to the public as a condition for approval of the resort. Under this alternative, private development of the coast would continue to limit recreational opportunities on the coast in the long-term.

Partnerships and Land Management

Current land management and partnerships for recreation will continue at current levels. Los Padres National forest will continue to acquire land within their authorized boundary from willing sellers and work with local and state agencies on potential trail connections between existing public lands.

Access to Vandenberg AFB would continue to be limited by security, natural resource concerns, staffing, and funding. Under Alternative 1, restricted access on Vandenberg AFB would continue to limit recreational use by the growing population.

Budget cuts in the Los Padres National Forest have forced the closure of selected trails. While these trails are not currently in high demand, if future demand increases it would be a more expensive and time consuming endeavor to reestablish them in the future.⁷⁶ Closure of trails would cause long-term adverse impacts on recreational use.

Partnerships between the Juan Bautista de Anza NHT and the local community would result in long-term beneficial impacts on the recreational experience of the coastal trail. National Park

Service technical assistance programs would continue to be available for recreation and conservation planning within the study area. This type of technical assistance could provide a minor beneficial impact to recreational activities within the study area.

Funding/Grant Options

Limited funding will be available through federal grant recreation programs such as the Land and Water Conservation Fund and the California Coastal Conservancy. These funding sources are competitive with a wide area of distribution. They would continue to provide a negligible to moderate beneficial impact on recreation in the study area.

Conclusion

Although there may be some expansions and improvements to existing developed recreation sites, and some improvements in access to undeveloped areas with recreation potential, there would be a minor increase expected in the future supply of recreational opportunities in the study area.

It is likely that population growth in the region would significantly increase the demand for recreational opportunities in the study area. Consequently, to the extent that existing sites are already used to capacity in peak periods, the increased demand in those periods would not be satisfied. Recreation demand in non-peak periods would continue to be satisfied by existing parks and access areas. A growing imbalance between recreation supply and demand would have some effect on the quality of experience. As recreation sites are more often crowded and management staff capabilities are stretched, the quality of the recreational experience may be expected to decline.

Future recreational opportunities in the study area would continue to be limited by private property concerns, increasing land values, and limited funding for acquisition and management of recreational areas. Existing partnerships and funding programs would continue to provide a minor to moderate beneficial impact on recreation in the study area.

Alternative 2

Alternative 2 includes options for expanded public recreational opportunities. Options would involve additional funding and resources for recreational lands and facilities. Funding could be used to develop trails or to acquire available properties that have recreation potential.

Programs that will facilitate funding for land acquisition and trail development

Establishment of an open space district (OSD) or state land conservancy could provide a considerable increase in the amount of funding available for the purchase of land and easements within the study area. Tables 13 and 14 in the Land Use section includes examples of budgets and acres of land protected under OSD's and state land conservancies. Depending on goals established by the local community, both OSD's and state land conservancies can provide recreational opportunities as a management priority.

If recreational needs were established as a priority for such an agency in Santa Barbara County, then millions of dollars in funding could be available to protect land for open space and recreation use when private land goes on the market. In addition, funding from an OSD or state land conservancy could assist in accelerated implementation of coastal trail sections and potential coast to crest trail connections as compared to Alternative 1. Based on the experience of existing OSD's and state land conservancies listed in the Land Use section, we can assume that this would have a long-term beneficial impact on recreation in the study area.

State and county agencies could seek additional opportunities to provide recreational and coastal access opportunities on significant resource lands. For example, the state could establish proposed marine park and protected area concepts within the study area. The proposed state marine parks concepts at Point Conception and Refugio and the marine conservation area concept at Naples would have a minor beneficial effect on recreational use including fishing and diving.

If public access was made available to Point Conception through the BLM's California Coastal National Monument or some other managing entity and if access were improved for Point Sal, these opportunities would have a beneficial impact on recreational access in the western end of the study area.

If Vandenberg AFB partnered with county parks in determining areas on the base that could be opened for public use while the more sensitive Ocean Beach and Surf Beach are closed, this could help to mitigate the impacts of seasonal closures for protection of the snowy plover. Developing approaches to routing the coastal trail through the base including partnering with the Juan Bautista de Anza NHT and the county could provide additional beneficial effects by providing more coastal access for the North County residents and visitors.

Conclusion

Overall, additional funding sources and stronger priorities for recreation, including coastal access, would enhance recreational opportunities and would help meet the long-term recreation needs of the local community and southern and central California region. An increase in recreational opportunities would mean fewer days of over-capacity use, thereby increasing the quality of recreational use and experience in the study area. Adverse impacts on recreation in the study area would be somewhat reduced in comparison to Alternative 1.

Scenic Resources

AFFECTED ENVIRONMENT

Scenic resources are described in Part 1, under Resource Description.

Public opportunities to experience the scenic resources of the study area are most common in the eastern end of the study area. Access to scenic views is primarily from Highway 101, coastal parks, trails, and beach access areas. Public access points in the western end of the study area are limited by large private landholdings and Vandenberg AFB. The only opportunity to experience the scenic resources of the entire study area coast is through travel on the Amtrak Coast Starlight train. Passengers on this route experience some of the most spectacular views on the Southern California coast. Much of the rail corridor follows the historic route of the Juan Bautista de Anza NHT in areas that are otherwise off limits to visitors, including Hollister and Bixby Ranches and Vandenberg AFB.

According to the Santa Barbara County Coastal Plan, the scenic quality of the area from Gaviota State Park to the Guadalupe Dunes north of Point Sal is a visual resource of national significance. Santa Barbara County seeks to protect scenic resources through county zoning regulations. The Coastal Plan includes a View Corridor Overlay designation for the entire coastal zone. The County Board of Architectural Review reviews all development in this area to ensure that scenic resources are protected. In addition, the Williamson Act and easements are tools that have protected scenic resources through limiting development.

Protection of scenic resources varies among the public land managers in the study area. The Los Padres NF's Land and Resource Management Plan calls for protection of the scenic viewshed along the south slope of the Santa Ynez Mountains to maintain the rugged, natural appearing character of the landscape, while also addressing other protections and uses. Large open spaces on

Vandenberg AFB have retained scenic quality. However, portions of the base that have facilities to meet base missions as such launch facilities and communication towers have had an impact on the scenic quality. State and County park lands protect portions of the study area including scenic canyons and coastal areas.

Trends

- The rocky shoreline at Point Sal has retained its undeveloped character and integrity over time.
- The Bixby Ranch/Point Conception area has remained in ranching over the past one hundred years, and has retained its visual integrity. East of Bixby Ranch is the Hollister Ranch area which has been subdivided into rural residential lots. Although still in ranching use, construction of over one-hundred miles of roads and residential development has somewhat altered the coastal ranching landscape in this area. In addition there are more lots that still have development potential.
- Industrial uses on the Gaviota Coast have had an impact on scenic resources. Oil processing facilities and pipelines at Cojo, Hollister Ranch, Gaviota, Las Flores Canyon, and Ellwood have impacted scenic views along the coast while oil platforms from Point Arguello to Ellwood impact scenery offshore. The Tajiguas County Landfill also impacts the visual experience. Careful siting and design have reduced, but not eliminated, the visual impacts of these facilities.
- In the eastern end of the study area, the Ellwood coast has had scenic impacts from the development of residential subdivisions, Bacara Resort, and golf courses.

ENVIRONMENTAL CONSEQUENCES

Alternative 1

Effectiveness of the existing controls and regulations in protecting the rural scenery, urban quality, and design of the built environment in the study area

Protection of agricultural land has direct beneficial impacts on visual resources. Williamson Act contracts and conservation easements preserve the scenic quality by maintaining land in open space. Agricultural operations and grazing both have both beneficial and adverse impacts on scenic resources. For example, pastures, orchards and row crops can be visually pleasing, but overgrazed areas may be less pleasing.

Some scenic land would be displaced by the development of new residential and commercial structures, and new support facilities such as access roads and driveways, and use of non-native plants in landscaping. Planning and design of these developments in compliance with existing regulations would ensure that some consideration is given to avoidance or mitigation of scenic impacts. However, some future projects proposed for highly scenic areas have the potential to cause adverse impacts on scenic resources. Most of the private land in the study areas is under agricultural zoning with 320-acre and 100-acre minimum lot sizes. Several areas under agricultural zoning allow smaller 20-acre (100 acres total in the study area) and 40-acre (appx. 8,000 acres total in the study area) minimum parcel sizes. Smaller residential parcels will be permitted in the Naples area (485 acres). Over time, rural residential development on 100-acre or smaller lots could cause cumulative adverse impacts from the construction of houses and supporting facilities. Given the topography of the study area, development would most likely occur on the shallow slopes of canyon valleys. This would create visual impacts from beach areas and Highway 101.

Proposed decommissioning of oil processing and transport facilities at Cojo, Hollister Ranch, and Gaviota may have a beneficial impact on scenery

within the study area depending on what uses replaces those facilities. Santa Barbara County's plan to vertically expand the Tajiguas landfill over the next five years could have a major adverse impact on the scenery of that section of the coast.

Substantial portions of the study area are protected through public ownership where management goals include the protection of scenic resources. While some adverse impacts may result from the construction of facilities at Vandenberg AFB, overall the adverse impacts on the scenic quality of public land would be expected to be minor. Management goals of the Los Padres NF would continue to protect the scenic value of the south facing slope of the Santa Ynez Mountains.

Public Opportunity to Enjoy Scenic Resources and to Access Viewpoints

In the eastern end of the study area, primary public opportunities to experience scenic resources would continue to be at existing parks and beach access areas and along Highways 101 and 1. Several proposed access areas in Ellwood and El Capitan Canyon would provide additional access to enjoy scenic resources. Future development of private land would have a minor adverse impact on the ability to expand opportunities to enjoy scenic resources.

In the western portion of the study area access to scenic resources would remain limited. Access in this area would continue to be at Jalama and Ocean Beach County Parks, very limited access to portions of Vandenberg AFB, and the Amtrak Coast Starlight Train that traverses the entire study area coast.

Conclusion

In the near-term, the area's scenic qualities would remain relatively high. Some minor negative impacts on the quality of scenic resources within the study area would result from current development proposals and projects. In the long-term, increasing pressure for urbanization near the rural urban limit line and development of rural residential estates could result in moderate cumulative adverse impacts on scenic resources and public opportunities to access scenic resources.

Alternative 2

Effectiveness of proposed programs and policies in protecting the scenic resources, urban quality, and design of the built environment in the study area

Protection of open space through these proposed programs and policies could reduce the amount of development in the area and thus reduce adverse impacts on scenic resources. Establishment of an open space district (OSD) or state land conservancy could provide a considerable increase in the amount of funding available for the purchase of land and easements within the study area as described in the previous section on land use. Permanent protection of land with high scenic value would have a long-term beneficial impact on the scenic quality of the Gaviota Coast.

While upzoning is highly unlikely in the near term, actions adopted to strengthen the existing zoning limitations on the scale of development would help to protect the area's scenic resources in the long term. Limiting upzoning through voter initiatives could help prevent future development in the eastern end of the study area. Additional housing needed to accommodate population growth could be directed to urban areas, avoiding long-term adverse impacts on scenic resources in rural areas.

Impacts on scenic resources on public lands would be similar to Alternative 1.

Public Opportunity to Enjoy Scenic Resources and to Access Viewpoints

Public opportunities to experience scenic resources could be improved with acquisition of additional park lands and construction of trails. Establishing recreation as a priority for an OSD or state land conservancy could provide funding for implementation of new trails and recreational areas. Based on the experience of OSD's and state land conservancies listed in the Land Use section, we can assume that this would have a long-term beneficial impact on access to scenic resources.

Point Sal and Point Conception are two of the most striking features of the study area. If public

access were made available to Point Conception through the BLM's California Coastal National Monument or another managing entity and if access would be improved for Point Sal, these opportunities would have a significant beneficial impact on scenic resources in the western end of the study area. Additional access in this area could also be made available to the public if Vandenberg AFB partnered with county parks and the Juan Bautista de Anza NHT to provide guided access. If these recommendations were implemented, Alternative 2 would have a long-term beneficial impact on public opportunities to access scenic resources.

Conclusion

Protection of additional open space under Alternative 2 could reduce the amount of development in the area and thus reduce adverse impacts on scenic resources in the long-term as compared to Alternative 1. Acquisition of additional recreational areas and construction of new trails would provide more opportunities for public access to scenic resources.



Sandpiper golf course, NPS photo

Water Resources

AFFECTED ENVIRONMENT

Water Supply. Across the state the demands of a growing population, coupled with efforts to reverse decades of ecological decline in rivers, lakes, and wetlands, have placed strain on scarce water supplies. The study area relies on local groundwater, the Lake Cachuma Reservoir, and water from Northern California supplied by the State Water Project for its water supplies. Groundwater supplies about 80% of Santa Barbara County's domestic, commercial, industrial and agricultural water supply. The majority of agricultural and rural residential properties within the study area rely on groundwater, while the Goleta area and Vandenberg AFB have an adequate supply of water for current and future plans, having recently secured water through the State Water Project.

Chloride contamination is a water quality concern in Santa Barbara County's groundwater due to the potential for seawater intrusion. This occurs when there are no geological barriers between the ocean and groundwater basins. Overpumping of groundwater and irrigated agriculture with poor drainage can increase the likelihood of seawater intrusion.

State Water Project. The State Water Project (SWP), managed by the California Department of Water Resources, was authorized in 1951 to collect, store and distribute water from Northern California to southern, more arid parts of the state. The County of Santa Barbara first contracted with the SWP in 1963 to secure water supplies. At this time funds were not allocated to construct a delivery system for the water entitled to the County. The six-year drought from 1986 to 1991 eventually spurred voters to fund the construction of a delivery system to supply water to areas throughout the county, including Goleta and Vandenberg AFB. The Goleta Water District receives 4,500 acre feet per year (AFY) while Vandenberg AFB receives 5,500 AFY. During times

of shortage these areas must accept a proportionate reduction in their entitlement.⁷⁷

Groundwater. Several major groundwater basins in Santa Barbara County have experienced overdraft conditions over the years. Overdrafted basins within the study area include the Lompoc and San Antonio Basins. Supply of water from the SWP to Vandenberg AFB and Goleta has alleviated potential water shortages from overdraft, and in the case of the Goleta West sub-basin, has led to replenishment. The Santa Barbara County Comprehensive Plan, Conservation Element, Groundwater Resources Section contains goals and policies to protect county groundwater resources. The effects of new extractions are evaluated under the California Environmental Quality Act pursuant to the thresholds adopted in the Comprehensive and Coastal Plan Policies. The Coastal Plan requires protection of groundwater basins and limits projects that would exceed water yields.

Groundwater basins within the study area include the San Antonio, Lompoc, and Goleta basins as well as the Ellwood to Gaviota, and Gaviota to Point Conception Groundwater Areas. The following is a description of each basin and its current status.

San Antonio Groundwater Basin. The western portion of the San Antonio Groundwater Basin is within the boundaries of Vandenberg AFB, which sometimes uses this water for Base operations. Analyses of water samples indicate that there are high concentrations of total dissolved solids (TDL) in the extreme western basin. There is no evidence of seawater intrusion in this basin.

A 1999 study determined that the basin was in overdraft status at a level of 9,431 AFY. Most of the overdraft is a result of use for agricultural purposes, primarily vineyards outside of the study area. Vandenberg AFB has reduced its consumption from 3,400 to 300 AFY with the recent importation of State Water Project water; however, this drop has been offset by recent vineyard development outside of the study area. Under these conditions, the underflow of water

trapped in bedrock may cause a deterioration of groundwater quality.

Lompoc Groundwater Basin. The Lompoc Basin consists of three sub-basins including the Lompoc Plain, Lompoc Terrace, and Lompoc Uplands. Within the study area, water quality in the Lompoc Basin is poorest near the coast. Poor water quality is attributed to upwelling of water trapped in bedrock, a reduction in fresh water flow from the Santa Ynez River, agricultural return flows, and seawater leakage from the overlying estuary. Groundwater within the study area (Lompoc Terrace Basin) is generally of better quality than the inland Lompoc Plain basin.

Groundwater is the only water supply for this basin with agricultural uses accounting for 70% of the water use. It is currently in a state of overdraft (991 AFY).

Gaviota to Point Conception Groundwater Area. The Gaviota to Point Conception Groundwater Area encompasses 36 square miles between the Santa Ynez Mountains Crest to the ocean between Gaviota Creek and Point Conception. This area serves as the only water supply source to this area. Primary land uses are agriculture and ranching. To date no detailed land use and water demand survey has been conducted for this area. Resources are evaluated on a project basis through the County permit process.

Gaviota to Ellwood Groundwater Area. The Gaviota to Ellwood Groundwater Area encompasses 105 miles between the Santa Ynez Mountains crest to the ocean between Gaviota Creek and the Ellwood area. Land uses that rely on this groundwater area include the Exxon Las Flores Canyon oil processing facility, the Chevron Gaviota oil processing facility, residential development and agriculture at El Capitan Ranch, the El Capitan and Refugio state parks, the Tajiguas landfill and several large avocado orchards. Water quality samples indicate that many of the wells in this area are not suitable for domestic use without treatment. These samples indicated high salinity and hard water concentrations.

A detailed survey of land use and water demand has not been conducted for this area. However, the total groundwater storage of this area is over 2 million acre feet and average annual recharge to this area is 6,000 AFY. Similar to the Point Conception to Gaviota Groundwater Area, resources are evaluated on a project basis through the county permit process.

Goleta Groundwater (West Sub-basin). The study area includes the West Sub-basin of the Goleta Groundwater Basin in the City of Goleta. This basin is separated from the ocean by the More Ranch Fault. The basin storage capacity is 10,000 AFY. Pumping is primarily by private landowners at about 232 AFY. There is currently a

Table 18: Percentage of Exceedances for Bacterial Counts (1996-1998)

	1996	1997	1998
El Capitan State Beach	15%	5%	11%
Refugio State Beach	28%	24%	32%
Arroyo Quemado Beach	86%	71%	69%
Gaviota State Beach	17%	13%	31%
Jalama Beach	42%	36%	31%
Ocean Beach	27%	25%	15%
Surf Beach	NA	NA	0%
Source: County of Santa Barbara, Division of Environmental Health			

268 AFY surplus for this basin. This surplus is attributed to the availability of better water quality supplies for the City of Goleta from the SWP.⁷⁸

Lake Cachuma Water Project. Areas in the eastern portion of the Ellwood to Gaviota Groundwater Area, Vandenberg AFB, and City of Goleta rely on water from the Lake Cachuma Reservoir. This amounts to a relatively small amount of AFY and does not appear to pose threats of water shortage.

Water Quality. While its geologic, hydrologic, climatic, and ecological characteristics are unique in the nation, Southern California has also experienced one of the most dramatic environmental transformations due to rapid growth and development. For the past 150 years most of the watersheds and wetlands along the Southern California coast have been impacted by agricultural and urban development.⁷⁹

Because the study area coast is the healthiest remaining coastal area in southern California, its protection is important to coastal and terrestrial ecosystems such as the Channel Islands National Marine Sanctuary located just off the study area coast. Watersheds along the Gaviota Coast have a direct impact on marine waters along the coast as they transport nutrients, sediment and pollution (See Watersheds map in the “Maps” section for an illustration of coastal watersheds within the study area).⁸⁰⁻⁸¹

While waters in the Southern California Bight (SCB) have seen significant reductions in pollutants over the past 25 years, including 50% for suspended solids, 90% for combined trace metals, and more than 99% for chlorinated hydrocarbons, pollution from runoff and point sources continue to have an impact on resources such as fisheries and marine mammals. Beach closures from high levels of pollution in southern California undermine the area's \$7 billion tourism and recreation industry. In the summer of 2000 alone, there were over 150 beach closures on the southern California coast.⁸²⁻⁸³

The Santa Barbara County Environmental Health Division measures bacterial counts at beaches along the County Coast. Within the study area, bacterial counts were measured from 1996-98 at seven county beaches (See Table 18 for a list of exceedences at public beaches). During this time there were approximately 1,485 beach advisories, and approximately 850 beach closures due to water quality problems in the county. There was an average 30% chance that a beach would be closed or under advisory during this period.

The closings were commonly posted due to high bacteria counts (fecal coliform). The majority of these closings were attributed to pollutants brought to the coast by river runoff. Pollutants include urban runoff and agriculturally-based pollutants such as animal wastes and pesticides. Additionally, the City of Lompoc discharges approximately 3.7 million gallons of treated effluent per day into the Santa Ynez River. During winter, high runoff periods associated with storm and rain conditions followed by upwelling favorable winds have driven these river plumes south past Point Conception and to the vicinity of San Miguel Island.

The Arroyo Quemado Beach has experienced the highest bacterial counts. A recent study was completed by the county using DNA analysis to determine the source of fecal coliform bacteria in the lower Arroyo Quemado Watershed. The primary sources of bacteria were avian species, particularly gulls. Large numbers of gulls are typically present at the landfill site in the upper watershed.⁸⁴

The County of Santa Barbara Project Clean Water monitors surface water quality along the coast to screen storm water runoff for potential pollutants and identify pollution sources and transport mechanisms. Project Clean Water was initiated in 1998 to improve the water quality in local creeks and the ocean. The 2000-2001 report indicated that bacteria levels were consistently above state standards for body contact recreation during storm events in lower and upper portions of the watersheds. To date, Project Clean Water has focused its efforts in the eastern, more urban

sections of the county. Watersheds monitored in the study area include Devereux, Bell, and Tecolote.⁸⁵

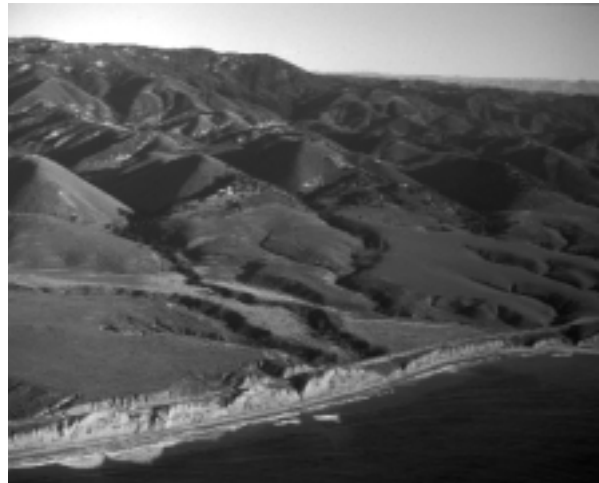
A study prepared for the County of Santa Barbara in 2001 involved extensive evaluation of creeks between Carpinteria and Gaviota to understand the influence of natural and human factors on their physical and biological characteristics. This study compared relatively undeveloped creeks on the Gaviota Coast to more developed creeks in the Santa Barbara urban area. Relatively undeveloped reaches investigated within the study area included San Onofre Creek and Gaviota Creek. The study revealed that these reaches had excellent habitat conditions, including intact native riparian vegetation, stable creek banks, complex aquatic habitat, stable substrate and good water quality. These creeks supported a diversity of aquatic vertebrates, including sensitive and endangered species.⁸⁶

Watershed Management. Although efforts are underway for a coordinated resource management plan for the Gaviota Creek watershed, only watersheds on Vandenberg AFB have current watershed management plans. The base's Integrated Natural Resource Management Plan advocates the integration of watershed planning and management activities. The watersheds on the base extend beyond the boundary of the base. Water quality impacts associated with activities on Vandenberg AFB include pollution related to domestic wastewater; industrial wastewater; storm water; pesticides and fertilizers; organic chemical pollution; and erosion. Off base activities not within Vandenberg AFB's control also impact watersheds.⁸⁷⁻⁸⁸

Trends

Water quality at local beaches is poor. Currently, there are frequent beach closures due to high bacteria levels and pollutants from runoff. During heavy rains, the storm runoff carries trash, grease, oil, pesticides, fertilizers, bacteria, and heavy metals into creeks. Plumes of these contaminants drift in the ocean stretching as far south as the Channel Islands.⁸⁹

Water is currently not a constraint to development in areas facing the largest growth pressure, because of access to state water in urban areas of the county.



coastal watersheds, NPS photo



seagulls at local beach, NPS photo

ENVIRONMENTAL CONSEQUENCES

Alternative 1

Will current projections for population, growth, and development impact water supply and water quality?

Increased residential and commercial development in the study area will increase the demand for municipal water supply. Recent access to State water has alleviated former constraints on water supply in the Goleta area where development is most likely to occur. The magnitude of demand depends on how many new residential units are added, and the nature of the commercial uses. For example, a major golf course complex would require a very substantial water supply. However, to the extent that these uses displace irrigated agriculture, overall water demands in the study area might decrease. Overall, it is not possible to determine the direction of water use with any certainty.

Because of regulatory requirements relating to the disposal and treatment of residentially and commercially generated wastewater, additional development should not generate effluents which will directly contribute chemical or biological pollutants to study area streamcourses. Development of land may cause soil erosion, increasing sedimentation of watercourses. The presence of grazing animals and the widespread use of herbicides and fertilizers may contribute to the pollution of local watercourses, and ultimately the ocean environment. To the extent that new development displaces lands which are currently used for extensive grazing or for irrigated agriculture, which may involve the heavy use of chemicals and the production of manure, water quality in the study area could improve. The direction of change in the study area water quality is difficult to predict at this level of analysis. However, without a comprehensive watershed plan for the study area's south coast watersheds, pollution from untreated runoff will likely continue to have major adverse impacts on water quality.

How will water quality at local beaches impact public health and safety under the current programs and policies?

Current efforts to prevent runoff and subsequent water pollution at beach areas are primarily focused on south coast watersheds outside the study area. These efforts would not improve water quality at areas such as the Arroyo Quemado beach, which suffers from the largest bacterial counts and subsequent beach closures, attributed to high concentrations of birds attracted to the Tajiguas landfill. Water quality efforts for the south coast watersheds are expected to have a negligible beneficial impact on water quality at study area beaches in the near-term.

How will watershed planning programs improve water quality in the study area?

Landowner involvement plays an important role in protecting water quality within the study area. The Natural Resource Conservation Service provides technical assistance to farmers and ranchers in the study area to prevent soil erosion and other impacts to water quality. Such technical assistance is provided at an individual level. Coordinated Resource Management Plans (CRMP) allow partnerships and coordinated efforts with farmers to identify watershed solutions that are economically viable. Currently, there is only one CRMP process in the study area, which is focused on the Gaviota Creek watershed. Because this program applies to only one watershed on the Gaviota Coast its impact on water quality at coastal areas other than those at Gaviota State Park would be negligible to minor. Water quality at area beaches would continue to be poor unless additional watershed/non-point source programs are implemented.

Vandenberg AFB uses many methods to control potential impacts to water resources, including regulation of land use, air pollution, pesticide and fertilizer use, wastewater management, and storm water pollution. These programs include addressing indirect adverse impacts to water quality from hazardous waste disposal, underground storage tanks, and landfill operations. Vandenberg AFB has also prepared a

Wastewater Management Plan, Industrial Wastewater Management Plan, and Storm Water Pollution Prevention Plan in an effort to control impacts to local water quality.⁹⁰⁻⁹¹

Conclusion

The direction of change in water use is difficult to forecast at this level of analysis. With the exception of Vandenberg AFB, watershed management programs in the study area would be limited to uncoordinated efforts in individual watersheds. Lack of coordinated watershed management programs to address water pollution within the study area would result in cumulative adverse impacts on water quality. Water quality at beach areas would continue to be a public health and safety concern.

Alternative 2

How will proposed programs and policies impact water quality and supply and public health and safety?

As described in the previous section on land use, establishment of new mechanisms for the purchase of open space could result in additional land conservation within the study area. Protection of open space and restricting development could have a long-term beneficial impact on water quality and supply in the study area.

Alternative 2 includes the potential action to develop voluntary cooperative watershed management initiatives that could be coordinated by the Cachuma RCD. Additional watershed management efforts could help reduce long-term adverse impacts on the water quality by taking a comprehensive approach to improving local water quality. This would have an indirect beneficial impact on public health and safety at study area beaches. Stronger efforts, including watershed planning, which could help to prevent runoff and subsequent water pollution at beach areas, including Arroyo Quemado Beach would help to improve water quality at beaches. Use of existing grant programs, such as those offered by the U.S. Fish and Wildlife Service, for coordinated

management efforts can have a moderate beneficial impact on watersheds and water quality.

Conclusion

Protection of open space and restricting development could have a long-term beneficial impact on water quality and supply in the study area. Impacts on water supply would be similar to Alternative 1. Adverse impacts on water quality should be somewhat reduced in comparison to Alternative 1. Additional watershed planning and application of grants could help reduce long-term adverse impacts on the water quality, which would have an indirect beneficial impact on public health and safety at study area beaches.

Air Quality

AFFECTED ENVIRONMENT

Trends

The Santa Barbara County Air Pollution Control District reports that the county is currently in non-attainment for both the state and federal one-hour ambient air quality standards, violating both state and federal standards. In recent years, the county has met standards for attainment reducing unhealthful air quality by over 80% from 1990 to 2000 despite increases in vehicle miles traveled and population growth. Between 1997 and 1999 air quality complied with the federal 1-hour ambient air quality standard for ozone.

The Santa Barbara County Air Pollution Control District recently adopted the 2001 Clean Air Plan

to formally request that Santa Barbara County be designated as an attainment area for the federal 1-hour ozone standard. County figures in the 2001 Clean Air Plan demonstrate a reduction in days exceeding ozone standards over the last ten years (See figure 3).

Primary sources of air pollution that contribute to ozone formation in Santa Barbara County include cars, trucks and other vehicles that produce more than half of the on-shore smog forming pollution.⁹² The 1999 Santa Barbara County Planning Emission Inventory measured primary ozone precursors such as tons of reactive organic compounds (ROC) and nitrogen oxide (NOx), emitted per day. The majority of emissions for both types were from mobile sources (planes, trains, boats, farm equipment, cars, trucks, buses and motorcycles) (See Table 19).

Figure 3: Days Exceeding Ozone Standards

(Santa Barbara County Air Pollution Control District, 2001)

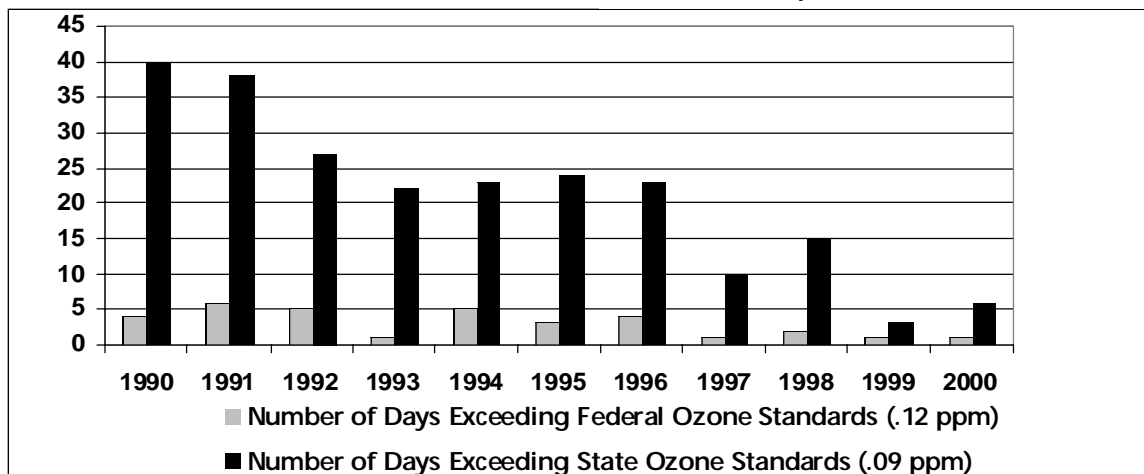


Table 19: 1999 Santa Barbara County Planning Emission Inventory

Emission Source	Percentage of Total Tonnage	
	NOx	ROC
Mobile Sources (planes, trains, boats, farm equipment, cars, trucks, buses and motorcycles)	87%	61%
Stationary Sources (Oil & Gas production, landfills, paints, mining)	11%	20%
Area-wide sources (Consumer products, pesticides, water heaters)	2%	11%
Total Tons emitted per day	42.53	49.28
ROC: Reactive Organic Compound NOx: Nitrogen oxides Source: Santa Barbara County Air Pollution Control District		

2001 Clean Air Plan. The Santa Barbara County 2001 Clean Air Plan establishes a comprehensive pollution control strategy to maintain attainment of the federal ozone standard. The Clean Air Plan includes control measures for all categories that contribute to ROC and NOx emissions. These include controls on industrial processes, combustion sources, petroleum handling, solvent use, consumer products, waste burning, automobiles and other mobile sources as well as transportation control plans to encourage less polluting modes of travel.

Emissions forecasting based on the 1999 emission inventory was developed to determine whether pollution control measures proposed in the 2001 Clean Air Plan will reduce emissions (See Table 20). The forecasts estimate that ROC and NOx emissions from offshore vessels will increase, while all other mobile sources will decline. Offshore vessels currently produce emissions equal to the amount produced by cars and trucks and are projected to increase 67% by 2015. These emissions, largely uncontrolled can impact onshore emissions under certain weather conditions.⁹³

Table 20: Santa Barbara County Planning Emissions Forecast

Emission Source	Percentage of Total Tonnage	
2005 Forecast	NOx	ROC
Mobile Sources (planes, trains, boats, farm equipment, cars, trucks, buses and motorcycles)	86%	51%
Stationary Sources (Oil & Gas production, landfills, paints, mining)	11%	24%
Area-wide sources (Consumer products, pesticides, water heaters)	3%	25%
Total Tons emitted per day	40.96	32.83
2010 Forecast	NOx	ROC
Mobile Sources (planes, trains, boats, farm equipment, cars, trucks, buses and motorcycles)	84%	45%
Stationary Sources (Oil & Gas production, landfills, paints, mining)	13%	25%
Area-wide sources (Consumer products, pesticides, water heaters)	3%	30%
Total Tons emitted per day	34.74	28.6
2015 Forecast	NOx	ROC
Mobile Sources (planes, trains, boats, farm equipment, cars, trucks, buses and motorcycles)	81%	40%
Stationary Sources (Oil & Gas production, landfills, paints, mining)	15%	27%
Area-wide sources (Consumer products, pesticides, water heaters)	4%	33%
Total Tons emitted per day	29.6	26.52
ROC: Reactive Organic Compound NOx: Nitrogen oxides Source: Santa Barbara County Air Pollution Control District		

ENVIRONMENTAL CONSEQUENCES

Alternative 1

This alternative could affect regional air quality by affecting the level of motor vehicle use and related emissions in the area either by residents or visitors to the area, and by affecting land uses that result in one-time (e.g., construction) or recurring (e.g., agricultural land tilling) earth disturbance with resultant changes in levels of particulates.

County air quality projections described above give an indication of how current programs and policies will impact air quality. The majority of air quality impacts projected for the year 2015 are a result of regional impacts outside of the study area. There are currently no proposals to regulate the offshore vessels that are producing emissions that will impact the study area. Emissions from mobile sources such as passenger cars and trucks are expected to decrease, despite an estimated increase in vehicle miles traveled, as a result of future regulatory controls. In the next fifteen years, primary adverse impacts on air quality in the long-term will be indirect from sources outside of the study area.

The 2001 Clean Air Plan projections do not go beyond the year 2015. However, population

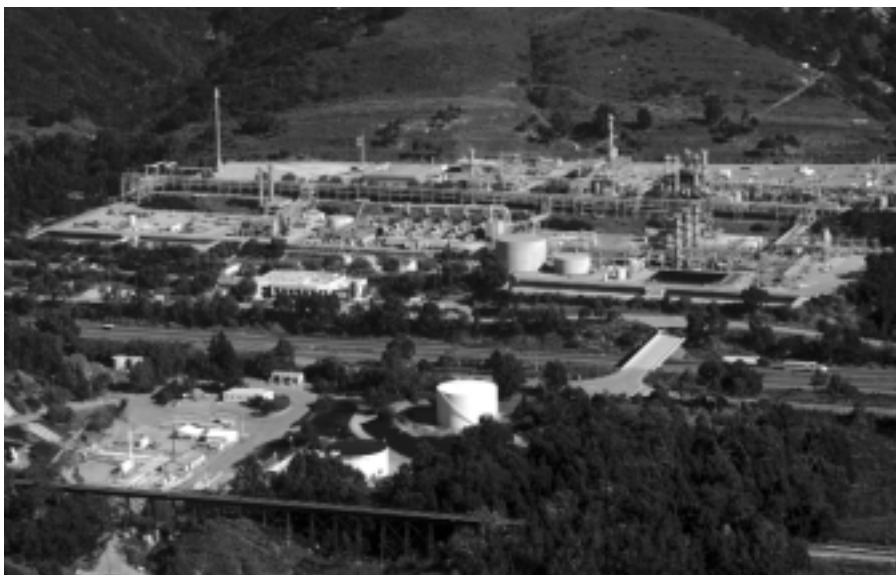
growth pressures forecast to the year 2030 indicate that there will be increasing pressure to develop housing. As described in the section on Land Use, this pressure may lead to the conversion of some farmland and/or vacant land in the study area to development. This conversion may affect how the study area contributes to air pollution in the region, e.g. conversion of farmland to housing may mean less particulates from land cultivation and more hydrocarbons from commute vehicles. If the jobs/housing balance continues to increase this may increase vehicle miles traveled which could have additional adverse affects on air quality.

Conclusion

The County Clean Air Plan predicts that a large percentage of air quality emission increases for the year 2015 will result from sources outside of the study area and Santa Barbara County. Without detailed projections and study of the impacts from build-out or an increase in the jobs/housing imbalance to the year 2030, it is not possible to determine the extent of the impact of Alternative 1 on air quality.

Alternative 2

Actions under Alternative 2 are unlikely to have additional impacts relative to those expected under Alternative 1.



Gaviota Oil and Gas Processing Facility, NPS photo